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Workshop on the Production of High-Quality Cotton Knitgoods*
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Coimbatore, India, 15 - 19 October 1984

REPORT**

*Organized by the International Institute for Cotton (IIC) and the United Nations Industrial Development Organization (UNIDO).

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TABLE OF CONTENTS

	Page	
Background	1	
Conclusions	4	
Follow-up	4	
List of participants/observers	5	ANNEX I
Programme of workshop	7	ANNEX II

Background

Cotton accounts for approximately 48% of world consumption of major textile fibres. It is grown in about 70 developing countries including 16 of the 31 countries classified in 1980 by the United Nations as "least developed". For many of these countries it is a key commodity. The total value of the exports of raw cotton and cotton seed products was about $ 570 million in 1980-81 (IMF data).

The share of the developing countries in the growth of world cotton production is increasing. Over the last 20 years the average production of the developing countries has risen by approximately 50%, whereas the production of the developed world has declined by 6%.

Cotton is one of the most important generators of employment and economic acitvity in the Third World. It is estimated that at least 125 million people (cotton farmers, farm workers and their dependents) in the devleoping countries derive their livelihood from growing and handling raw cotton. A high proportion of these people live in countries where unemployment and under-employment are problems of the highest priority.

Cotton provides the spearhead of industrial development for many countries of the Third World. Some 45-50 million people are dependent on the jobs which have already been created by the rapidly developing cotton textile processing industries in these countries. In order to ensure maximum employment in the rural areas of the cotton producing countries it is essential that their textile industries continue to use cotton as their basic raw material.

Cotton and cotton products provide the developing nations with a major source of foreign exchange. The annual value of the combined exports of raw cotton, cotton seed products and cotton textiles from the developing countries is currently about $ 7.000 million. Raw cotton and cotton seed products ranked either first or second in importance as agricultural export earners in about 22 developing countries in 1979/80 and accounted for more than 20% by value of agricultural exports in 15 of these countries.

Cotton is also an important source of food. The cotton seed is the world's fourth most important source of edible oil and the meal provides a valuable cattle food. If fully utlized it could provide 5-6% of the world's total requirements of crude protein.

The growing, processing and exporting of cotton and its products provides an almost ideal means of social and economic development and it is not therefore surprising that the development plans of many of the developing nations are based on the assumption that production of cotton and cotton textiles will remain a major growth factor in their economies. These plans could, however, be frustrated if they had to compete between themselves for a static or declining market. Although

world demand for textiles is forecast to expand at an average of about 2.5% per year it does not follow that cotton will automatically share in this expansion. The man-made fibres have already captured major sections of the market and, although in absolute terms raw cotton production is at record levels, cotton's share of world fibre consumption has dropped from 72% in 1954 to about 48% in 1980.

Encouraged by their great advances in the 1960's, the man-made fibre producers embarked on massive expansion porgrammes aimed at capturing an even greater share of the world's textile markets, including the local textile markets of the cotton producing countries themselves.

The Technical Research Division of the International Institute for Cotton (IIC) was set up in 1967 to undertake technical activities necessary to safeguard cotton's position in world markets. Much of its work is concentrated on products or processes which offer the greatest growth potential for cotton and on solving problems which, if unresolved, might lead to loss of markets. In order to remain competititve it is absolutely essential to upgrade the performance of the product at every level.

One of the areas which offers considerable growth potential for cotton is knitted outerwear. There is a strong consumer demand for garments which combine comfort and fashion appeal and which conform to the more relaxed life-style of today. Cotton has always enjoyed great popularity in knitted underwear. The production processes and performance standards for underwear are relatively undemanding but the production of high-quality, dimensionally stable cotton outerwear in attractive colours and fashionable styles introduces completely new considerations. The cotton processor is often faced with unacceptable uncertainties in attempting to produce in volume for the new market.

About four years ago IIC's Technical Research Division, with substantial financial support from the Overseas Development Administration of the UK Government, embarked on an in-depth programme involving extensive full-scale trials and development work, aimed at putting the manufacture of knitted cotton fabrics on a sound technical base, thus encouraging the production of high quality products by a larger number of companies.

The project established quantitative relationships between the knitting parameters, the finishing route and the final product performance for the most important cotton knit counstructions. The enormous body of data which was generated (over 1.000 separate fabric smaples were produced) has been converted into a variety of programmes which can be handled by semi-skilled personnel on inexpensive computers. Thus,

for example, whenever there is a change either in customer specifications or in the finishing process, the knitter can quickly calculate, without resorting to trial and error, what his new knitting parameters should now be. In this way manufacturing risks, development time and cost can be very much reduced and new markets can now be opened up in knitted outerwear from which cotton has hitherto been excluded.

Implicit in the agreement with the ODA was the obligation to disseminate this new knowledge as widely as possible in both developed and developing countries so as to create new markets for cotton and thereby increase cotton utlization to the benefit of the producing countries. Cotton processors in other countries are now showing an interest in this work and the time is opportune to make this knowledge available to processors in the developing world.

During the course of its work IIC acquired a great deal of experience and information on many aspects of knitgoods produc ion and this too should be made available to knitters in the developing countries some of whom may not yet aspire to the production of sophisticated knitted outerwear.

Financed by the UK Government's Special Purpose contribution to UNIDO, the IIC organized, in April 1984, a seminar in Manchester to discuss recent developments affecting quality and efficiency in the processing of cotton knitgoods. These included the results of recent research and development work by IIC and demonstrations of the Institute's computerized predictive models, designed to reduce time spent on empirical trials and to ensure greater consistency of product quality.

As a follow-up of the seminar a workshop was organized at the South India Textile Research Association (SITRA) in Coimbatore, India from 15 to 19 October 1984. It was conducted by two IIC experts Mr. R.D. Leah and Mr. J.T. Eaton. SITRA was responsible for the organization of the workshop and its technical staff assisted in the practical demonstrations that formed part of the workshop.

Conclusions

The research findings of IIC, on which the workshop was based, lay great emphasis on the need for quality control at all stages of manufacture and it was this element which proved to be of the greatest interest and value to the delegates. Not only did the experts pinpoint the key parameters which need to be controlled but they also explained how that control could be effected.

It is worth mentioning that virtually no knitting machines in India are fitted with positive feed devices to control the length of the stitches and yet this is a most important factor in determining fabric properties. The workshop was valuable in explaining the penalties for not having such control and it thus provided encouragement and justification to those who are currently developing or manufacturing positive feed devices. Use of these attachments would in itself produce a significant improvement in product quality.

The special computer programme supplied by IIC can be utilized in may ways. While some delegates were interested in its use as an aid to developing new or improved products, its main value during the workshop was to provide quantitative evidence of the value of quality control measures. These include the measurement of yarn count by knitters and such action will bring pressure to bear on spinners to raise quality standards.

Many of the finishing routes which have been studied by IIC are not appropriate for Indian conditions but the methods or working described by the experts can readily be adopted by SITRA to cover local finishing practices.

Follow-up

a) SITRA will run training courses, including practical demonstrations, on quality control measures for knitgoods producers. These will be based on the data and visual aids provided by IIC.

b) SITRA has licensed a manufacturer to produce SITRA-designed positive feed units and once these become available, will take all steps necessary to ensure their adoption by the knitters.

c) SITRA will use the computer programme to provide demonstrations in mills of the importance of quality control measures especially for yarn count and stitch length.

d) IIC will continue to supply advice and data to SITRA and, if requested, will help SITRA to examine other finishing routes as mentioned above.

ANNEX I

WORKSHOP

ON

THE PRODUCTION OF HIGH QUALITY KNITGOODS

SITRA

OCTOBER 15-19, 1984

LIST OF PARTICIPANTS/OBSERVERS

Name of Participants	Designation/Organisation	Country
1. Balasubramanian.N.	Managing Partner, Ditty Hosieries, Tirupur	India
2. Ghosh.B.N.	Partner, Gopal Hosieries, Calcutta.	"
3. Jain.R.C.	Managing Director, Tirupathi Texknit Ltd., New Delhi. (President, Federation of Hosiery Manufacturers Association, India)	"
4. Jayabal.S.	Manager, Hosiery Division, Tirupur Textiles Pvt. Ltd. Tirupur. (Crystal Garments, Tirupur)	"
5. Sethupathy.A.	Assistant Manager, Vijayakumar Mills Ltd., Udumalpet. (Manufacturers of Colts knitwear)	"
6. Viswanathan.K.S.	Manager, TanTex, M/s T.T. Investments & Trades Pvt Ltd., Tanjavur.	"
7. Yuvaraj Sampath	Export Executive, Yuvaraj International, Tirupur.	"
8. Lim.S.H.	Managing Director, Provincial Knitting Factory Sdn Bhd., Penang.	Malaysia
9. Rizvi.H.M.	Production Executive Nawaz Industries, Karachi.	Pakistan
10.Marquez.D.C.	Knitting Manager, Unisol Industries & Manufacturing Corporation, Manila.	Philippines
11.Medina.E.G.	Assistant Knitting Superintendent, Litton Mills Inc., Manila	"
12.Bartnik.Z.T.	Textile Training and Service Centre, Colombo.	Sri Lanka

Name of Participant	Designation/Organisation	Country
Observers		
13. Boeteng.E.A	Manager (Textiles) National Industrial Company, Accra. (Special Commenwealth African Assistance Plan Fellow at SITRA)	Ghana
14. Balasubramaniam.M.	Managing Partner, Jay Jay Mills, Tirupur	India
15. Banerjee.S.M.	West Bengal Hosiery Manufacturers Association, Calcutta.	"
16. Ghosal.S.P.	Director, Regional Textile Commissioner's Office, Government of India.	"
17. Kundu.A.K.	West Bengal Hosiery Manufacturers Association, Calcutta.	"
18. Rao.A.I.S.	Director, Textile Commissioner's Office, Government of India.	"
IIC		
Leah R.D.	Technical Manager, International Institute for Cotton (IIC) Manchester, U.K.	
Eaton.J.T.	Technical Manager, International Institute for Cotton (IIC) Manchester, U.K.	
SITRA		
Sreenivasan.K.	Hon. Adviser, The South India Textile Research Association, Coimbatore-14, India.	
Ratnam.T.V.	Director, The South India Textile Research Association, Coimbatore-14, India.	
Sivakumar.V.R.	Ass. Director & HOD Mechanical Processing The South India Textile Research Association.	
Varma.T.M.K.	Junior Scientific Officer	
Ramamurthy.R.	-do-	
Venkatapathy.D.	Senior Scientific/Technical Assistant	
Narasimhan.N.L.	-do-	

ANNEX II

PROGRAMME

DAY 1 - Monday - 15th October

9.30 - 10.00	-	Introduction and Welcome
10.00 - 11.00	-	Short Summary Statements by Delegates (5 minutes each)
11.15 - 12.30	-	The European Market
2.00 - 2.45	-	New Store Concept (Video)
2.45 - 3.30	-	Framework for Action
3.45 - 4.15	-	Definition of Terminology
4.15 - 5.00	-	Tour of SITRA

DAY 2 - Tuesday - 16th October

9.30 - 11.00	-	Knitting to Specifications
11.15 - 12.30	-	Useful Yarn Tests ?
	-	Quality of Local Yarns
2.00 - 5.00	-	Practical Demonstrations

DAY 3 - Wednesday - 17th October

9.00 - 12.00	-	Practical Demonstrations
1.00 - 5.00	-	Mill visits

DAY 4 - Thursday - 18th October

9.30 - 10.30	-	Setting Finishing Targets
10.45 - 12.00	-	Achieving Finishing Targets
1.30 - 5.00	-	STARFISH - Description and Outline - Application - Demonstration on Computer

DAY 5 - Friday - 19th October

9.30 - 10.00	-	Quality and Presentation (Video)
10.00 - 1.00	-	New Developments in Dyeing and Finishing
11.15 - 12.00	-	New Developments in Knitting
1.30 - 2.30	-	Mercerizing
2.30 - 5.00	-	Discussions and Concluding Session